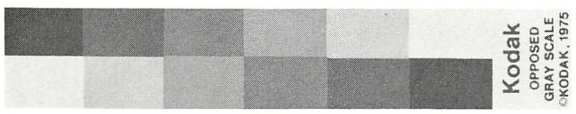
KODAK OPPOSED GRAY SCALES FOR A VISUAL CHECK ON EXPOSURE AND DEVELOPMENT

The use of density scales to check conditions of exposure and development has been a well-recognized practice for many years throughout the photographic industry. It is the basis for sensitometric evaluation of most of the photographic properties of sensitized materials. Density scales are also used to check the many factors which influence photographic behavior—such as light sources, safelight fog, developers, developer exhaustion, and the fundamental properties of the sensitized material. There are, of course, many more applications for density scales in photography.

The need for quick visual reference for checking exposure/development changes—intentional or unintentional—can be met by using the KODAK Opposed Gray Scale, Kodak Publication No. Q-18.



HOW TO USE THE *KODAK* OPPOSED GRAY SCALE

Position the guide next to some good line copy and make some test exposures to determine the best exposure and development time for the copy. These test exposures may also be used to establish the density value at which certain exposure and development conditions will produce the most significant density change (or break) in the scales. (High contrast films, such as KODALITH Films, essentially reproduce copy as either black or white. The term "break" is commonly used to describe the point on the gray scale where insufficient exposure from the copy results in no recorded density on the film on one side, and where sufficient exposure results in noticeable density on the other side. See illustrations.)

Proper reproduction of a specific type of line copy will produce a "break" in the Opposed Gray Scale (see Figure 1). Improper reproduction of that same type of copy will cause the "break" point to shift (see Figures 2 and 3). Most high-contrast films and papers are extremely sensitive to slight changes in exposure or processing in the area of the tone scale serviced by the Opposed Gray Scale. As a result, the reproduction of the opposed scale offers a quick, visual appraisal of the status of your line reproductions. The break point will also vary as exposure is adjusted to suit the different types of copy. If the copy has colors, a colored filter is sometimes used to get good black-and-white separation. The use of a colored filter may cause slight changes in the "break point" that has been established as being ideal for good line copy without such a filter.

The test exposure that gave the best negative from good line copy—and established a visual reference (break point) in the guide—will be the proper aim point for a fairly wide range of copy conditions. Difficult types of copy, when properly photographed, will indicate a shift in the "break" on the guide. This shift will be about one step less for weak copy (or very fine lines) and about one or two steps more (overlap or break) for bold copy with an off-white or dirty background. See examples below.

Figure 1: Indicates normal exposure and development and is the correct reference point for average copy.

Figure 2: Indicates underexposure or weak developer, or is correct reference point for weak copy or very fine lines.

Figure 3: Indicates overexposure, or is correct reference point for bold copy with off-white or dirty background.

Because of differences in shop conditions and operations, experience in using the KODAK Opposed Gray Scale will soon establish the visual reference that is most suitable to your needs. Once you have established the best reference points on the guide for different types of copy or conditions, you will find that not only will you be able to interpret the results very quickly, but you will also get more repeatable results from day to day. If you like, you can run a routine check on conditions of exposure and development to keep your system from "drifting." If you are using a mechanized processor, you can double-check your processor conditions by referring to this guide. In other words, you can monitor intentional changes or standardized conditions of exposure and processing, and detect unintentional changes before valuable production is wasted.

The KODAK Opposed Gray Scale is also useful with tray development. By checking the guide against moderately overexposed or underexposed films during development, you can make your corrections in development time more reliable. When development progresses to the point where the guide shows the proper "break," the film should then have a good image because you will have adjusted the development time to compensate for the exposure error. Of course, extreme overexposure or underexposure of the film will not respond well to development compensation, and the exposure will need to be adjusted.

You will find other applications for this guide as you gain experience in using it, but the chief uses described will bring you one step closer to monitoring or standardizing some parts of your photographic production.

Graphics Markets Division

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